

Claims

What is claimed is:

pub B1 > 1. An apparatus for producing a mass storage backup, the apparatus comprising:
2 an input for receiving mass storage write commands, said commands comprising data
3 and a mass storage address at which the data is to be written;
4 a source of time information;
5 a circuit for associating a mass storage write commands with the time information,
6 thereby creating a log entry; and
7 a storage for accepting log entries.

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1 2. An apparatus as in claim 1 wherein the circuit for associating a mass storage
2 write command with the time information comprises a computing element and a program
3 element, which combines the time with a mass storage command thereby producing a log
4 entry.

pub B1 > 3. An apparatus as in claim 1 wherein the storage for accepting the log entries
2 further comprises:
3 a network connection for accepting the log entries and for said log entries into a
4 network; and
5 a server for accepting log entries from the network and for providing the log entries to
6 a log file on a log file mass storage device.

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4. An apparatus as in claim 1 wherein the network is the Internet.

1 5. An apparatus as in claim 1 wherein the mass storage address at which the data
2 is to be written comprises a sector address.

1 6. An apparatus as in claim 1 wherein the storage for accepting log entries is the
2 mass storage.

1 7. An apparatus as in claim 1 wherein the mass storage is a hard disk system.

1 8. An apparatus as in claim 1 wherein the storage for accepting log entries is a
2 RAM based virtual disk.

1 9. A method for backing up a mass storage the method comprising:
2 accepting mass storage write commands for the mass storage to be backed up;
3 appending a time to each of said mass storage write commands to form a log entry; and
4 storing said log entry in a log file.

1 10. A method as in claim 9 further comprising storing the log file in a non volatile
2 storage.

1 11. A method as in claim 9 wherein the storing the log file in a non volatile storage
2 further comprises storing the log file in a local mass storage different from the mass storage to
3 be backed up.

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12 A method as in claim 11 wherein the mass storage is a hard disk.

1 13. A method as in claim 10 wherein the storing the log file in a non volatile
2 storage further comprises:

3 providing the log file to a network interface;

4 using the network interface to couple the log file into a network;

5 accepting the log file from the network; and

6 storing the log file on a mass storage device.

1 14. A method as in 13 wherein using the network interface to couple the log file
2 into a network further comprises:

3 receiving a status from the network;

4 testing the status to determine if the network traffic is low; and

5 coupling the log file into the network dependant on the network traffic.

1 15. A method as in claim 9 the method further comprising taking a snapshot of the
2 mass storage to be backed up prior to accepting mass storage write commands for the mass
3 storage to be backed up.

1 16. A method as in claim 9 wherein the step of storing said log entry in a log file
2 further comprises:

3 determining the sector to be written to from the most recent log entry;

4 searching for log entries having an earlier time stamp which writes to the same
5 address; and

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7 deleting any log entries with an earlier time stamp which writes data to the same
address as the most recent log entry.

1 17. A method of recreating the state of a mass storage device at a given time the
2 method comprising:
3 accepting a snapshot of the state of a mass storage device;
4 accepting log entries from the time of the snapshot;
5 writing the snapshot to a storage device;
6 writing the log entries, from the time of the snapshot, to the storage device; and
7 terminating the writing of the log entries when the timestamp of the log entry is equal
8 to the given time.

1 18. A method as in claim 17 wherein the accepting a snapshot of the state of a mass
2 storage device and accepting log entries from the time of the snapshot further comprises
3 accepting a snapshot of the state of a mass storage device and accepting log entries from the
4 time of the snapshot from a network connection.

1 19. A method as in claim 18 where the network is the Internet.

1 20. An article of manufacture comprising a computer readable media and computer
2 code which causes a computer to:
3 accept mass storage write commands for a mass storage to be backed up;
4 append a time to each of said mass storage write commands to form a log entry; and
5 store said log entry in a log file.